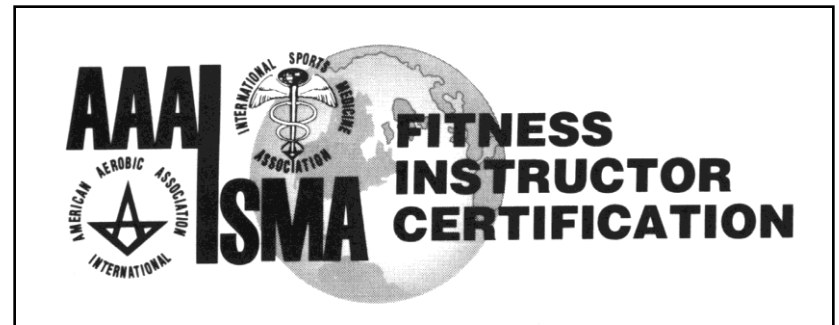
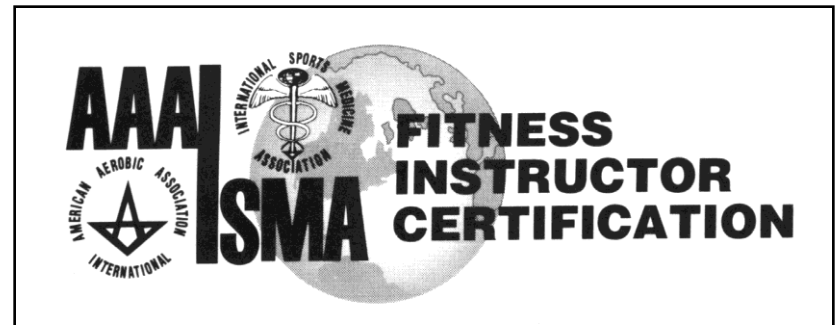

Advanced Personal Fitness Trainer Certification

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Secrets to Building Muscle & Losing Fat

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Client Intro

- Paper work:
 - Health history
 - PARQ
 - Waiver
- Evaluation
 - Postural
 - Orthopedic
 - Medical / Prescription Drugs / Others



Terms of Endearment

- **NEAT**

- Non-Exercise Activity Thermogenesis

- **AEE**

- Activity Energy Expenditure

- **TEF**

- Thermal Effect of Food

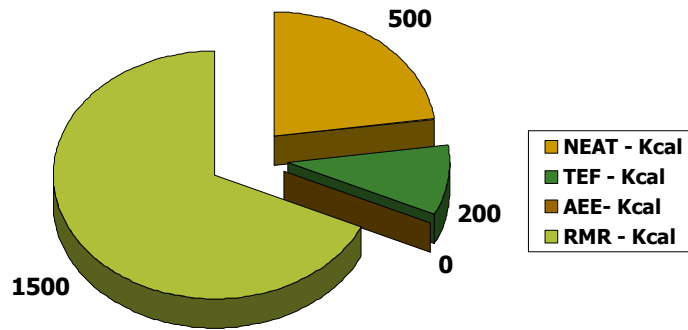
- **RMR**

- Resting Metabolic Rate



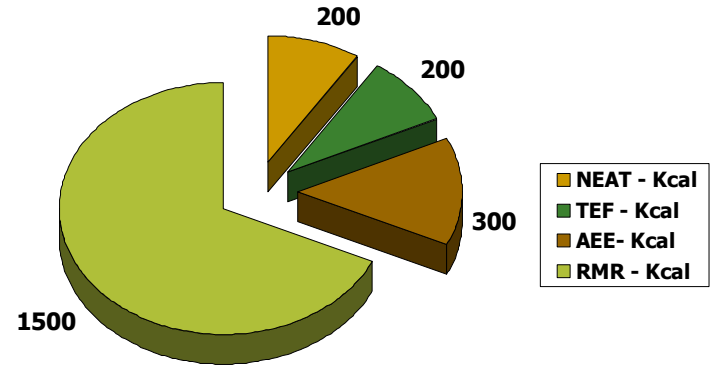
Total Daily Energy Expenditure

Pre-Training



Total Kcal = 2200

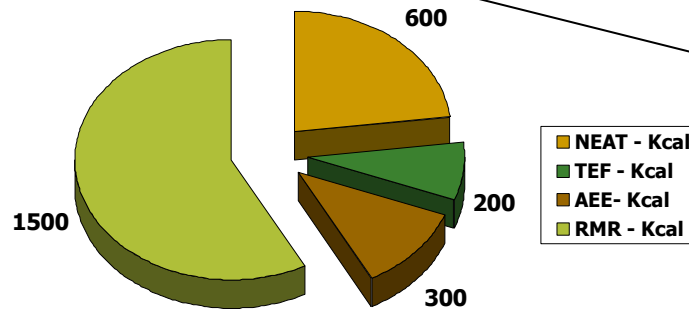
Training – Non-effective



Total Kcal = 2200

No energy deficit from exercise due to decrease in non-exercise physical activity

Training – Effective



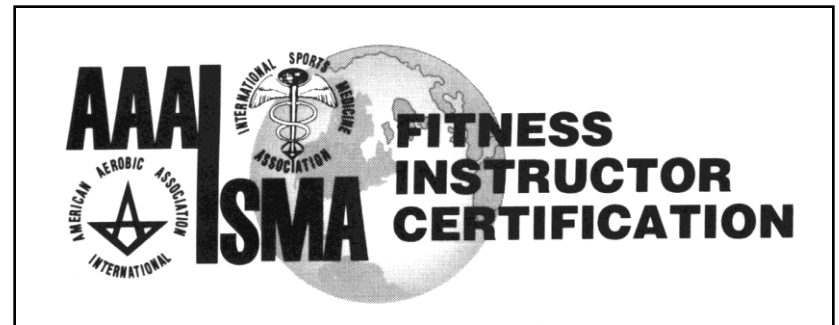
Total Kcal = 2600

400 Kcal energy deficit from exercise



Workout Routines for the Advanced Trainer

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Acronyms

- SAID
 - Specific Adaptation to Imposed Demands
- ADL
 - Activities of Daily Living
- ROM
 - Range of Motion
- HTN
 - Health Through Nutrition



Major Energy Producing Systems



	Substrate	Oxygen Required	Speed of ATP	Total ATP Production
ATP - CP <30 sec	<i>Stored Phosphagen</i>	No	<i>Fast</i>	<i>Very Limited</i>
Anaerobic <3 min	<i>Glucose & Glycogen</i>	No	<i>Fast</i>	<i>Limited</i>
Aerobic 3+ min	<i>Glucose, Glycogen, Protein, & Fat</i>	Yes	<i>Slow</i>	<i>Essentially Unlimited</i>



Cardiovascular Physiology

- **VO_{2max}** (*ml O₂ / KG body weight / min*)
- **1 MET** = *3.5 ml O₂ / KG BW/ min*
- **Cardiac Output** =
Stroke Volume (SV) X Heart Rate (HR)
- Ejection Fraction
- **Blood Pressure**
Systolic / Diastolic
(120/80 mmHg)



Karvonen's Formula

- **220** (Maximum Heart Rate at Birth)
- $220 - \mathbf{Age} = \text{Predicted Maximum HR (PMHR)}$
- $\text{PMHR} - \text{Resting Heart Rate (RHR)} = \text{Heart Rate Reserve (HRR)}$
- $\text{HRR} \times \mathbf{\text{Effort Percentages}}$
(i.e. 60%, 70%, 80%)
- Add RHR to Effort Values =
Target Heart Rates



Rate of Perceived Exertion

		Level 1	Watching TV – not a scary program
4		Level 2	Easy all day pace
5-6		Level 3	Breathing a bit harder but still comfortable
7-8		Level 4	Starting to sweat, still able to effortlessly converse
9-10		Level 5	Sweating, talking, and feeling good
11-12		Level 6	Working hard, but can hold light conversation
13-15		Level 7	Working very hard, can still talk, but only to yourself
16-17		Level 8	Working so hard can only grunt, did I mention sweat
18-19		Level 9	Talking to your creator
20		Level 10	Making deals with creator, all out!



Loads and Energy Expenditure

Level	%VO _{2max} / HRR	% max HR	Adaptations	Type of Exercise
2-3	55-65	60-70	Aerobic Source Pathways	Over Distance
3-4	66-75	71-75	Capillarization FFA Mitochondria	Endurance Foundation / Base
4-5	76-80	76-80	FOG Fibers O ₂ Transport Glycolysis	Endurance Foundation
5-6	81-90	81-90	FOG Fibers AT O ₂ Transport Lactate Clearing	Intervals / Race Pace
7-10	91-100	91-100	FT Fibers Speed Neurons Muscle Coordination	Race



Muscle Distinctions

- Cardiac
 - *Characteristics*
- Smooth
 - *Characteristics*
- Skeletal
 - *Functions*



Muscle Physiology

- Hypertrophy
 - Hyperplasia
 - Atrophy
 - Sarcopenia
- Contraction Types
 - Concentric*
 - Eccentric*
 - Isometric*



Size vs. ***Strength***



Size vs. Strength

■ Size

- #Type II_b Fibers
- Skeletal Size
- Muscle Belly Size

✦ Other Factors

- *Genetics*
- *Nutrition*
- *Toxins*
- *Hormonal Setup*

■ Strength

- #Type II_b Fibers
- Skeletal Size
- **Recruitment**
- **Leverage**

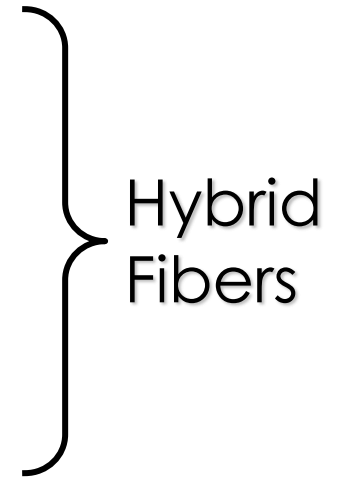
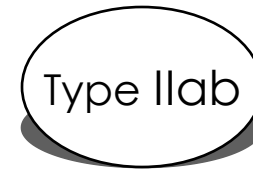
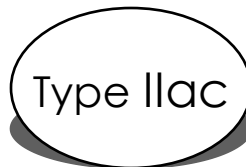
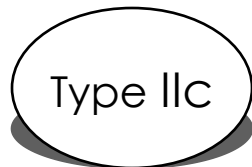
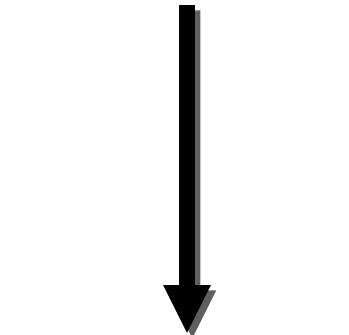
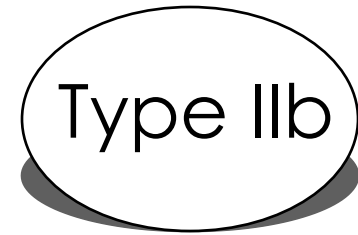
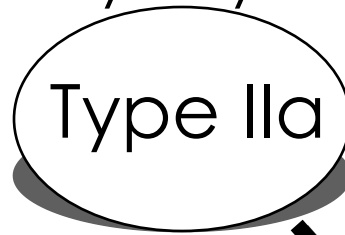
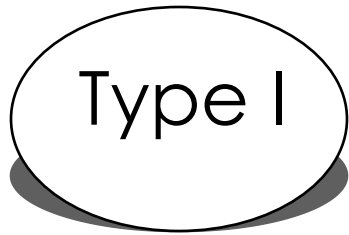


Muscle Fiber Types

Slow Twitch

Fast Oxidative
Glycolytic

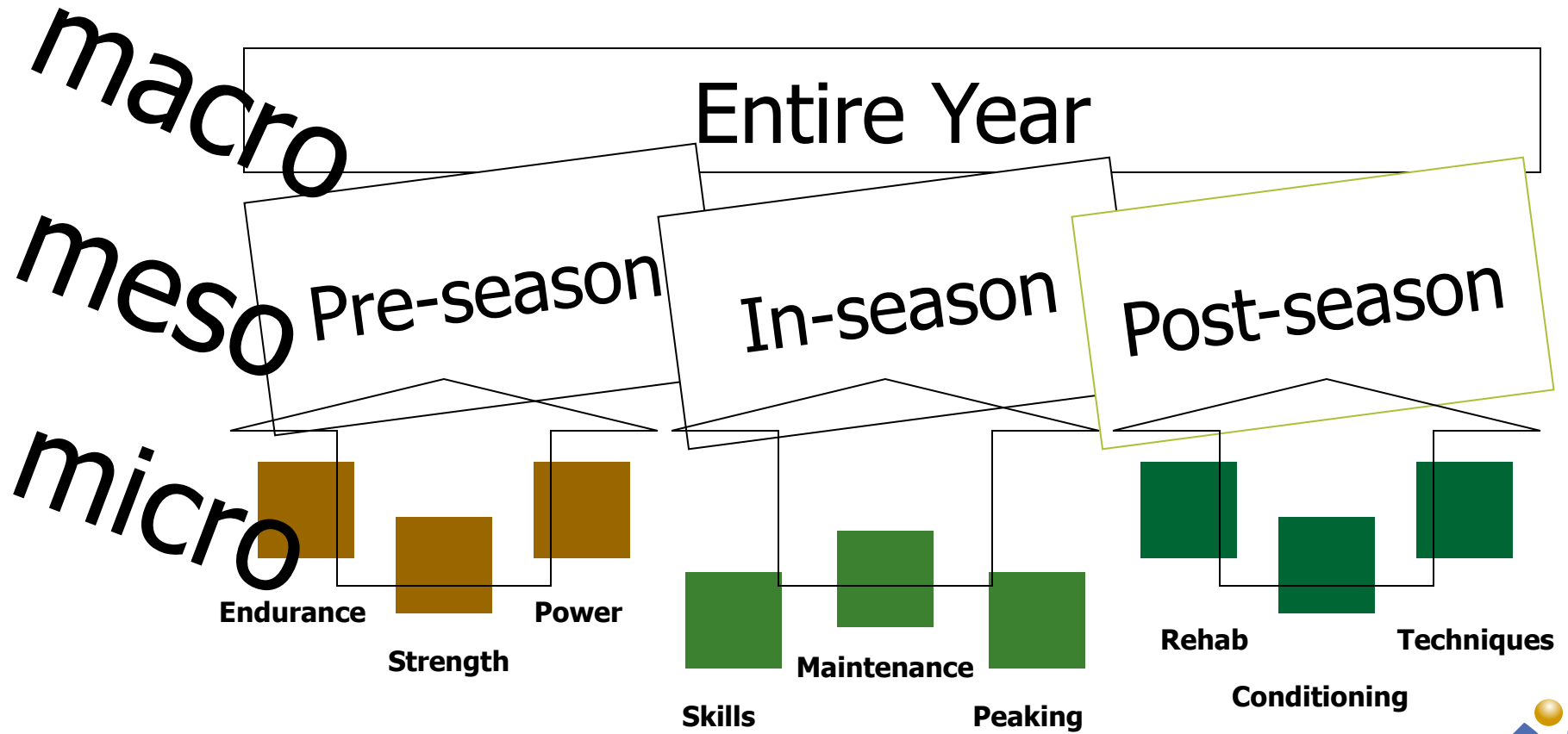
Fast Twitch



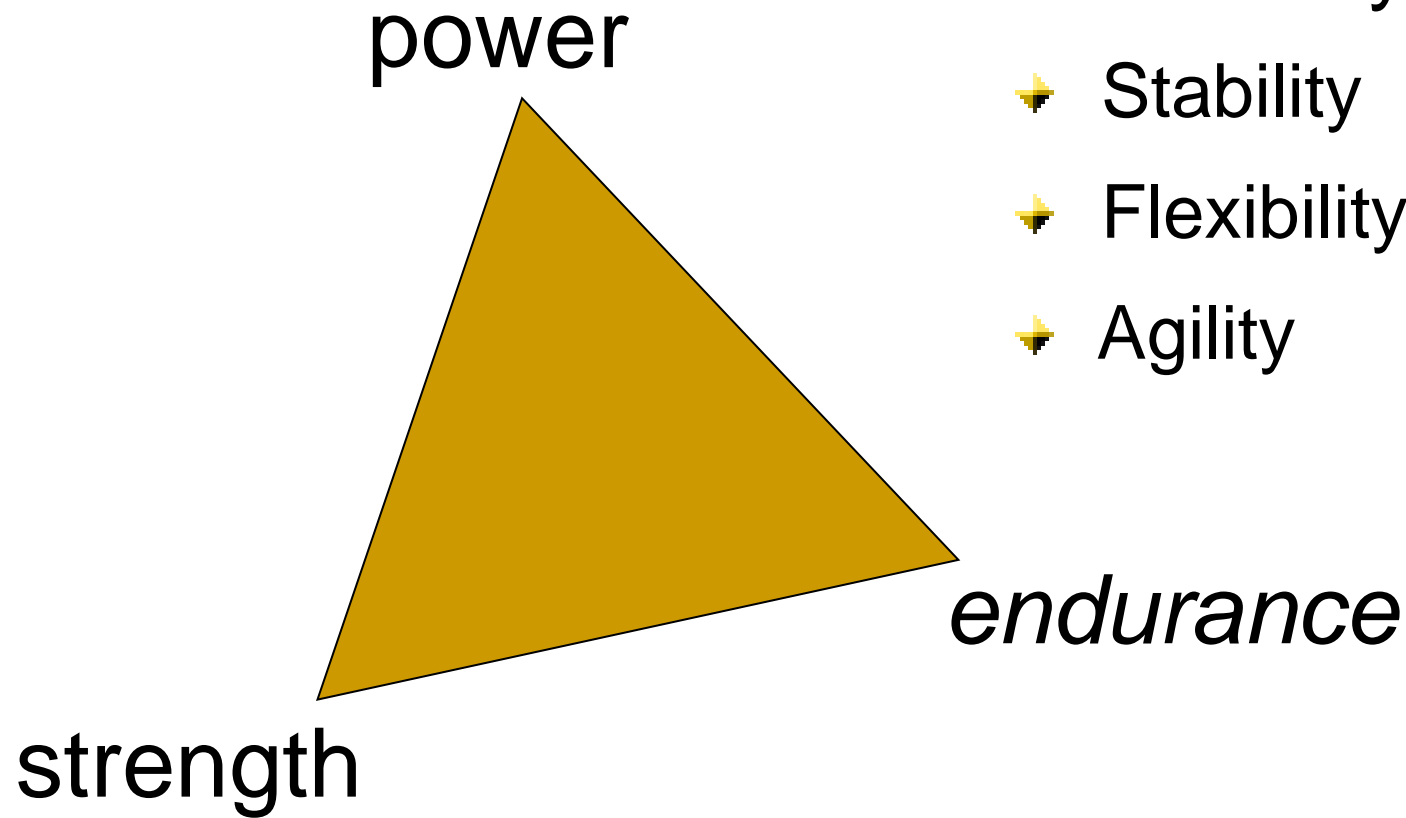
Ideal Muscle
Development



Periodization cycles



The Players



Other Players:

- ✦ Stability
- ✦ Flexibility
- ✦ Agility



Non-Linear Periodization

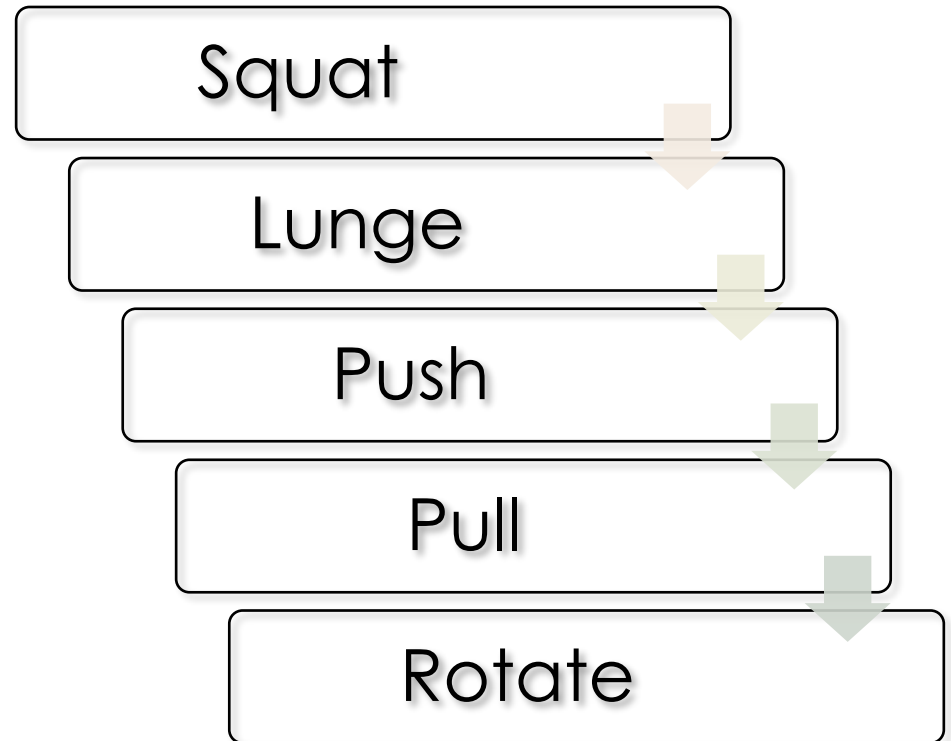
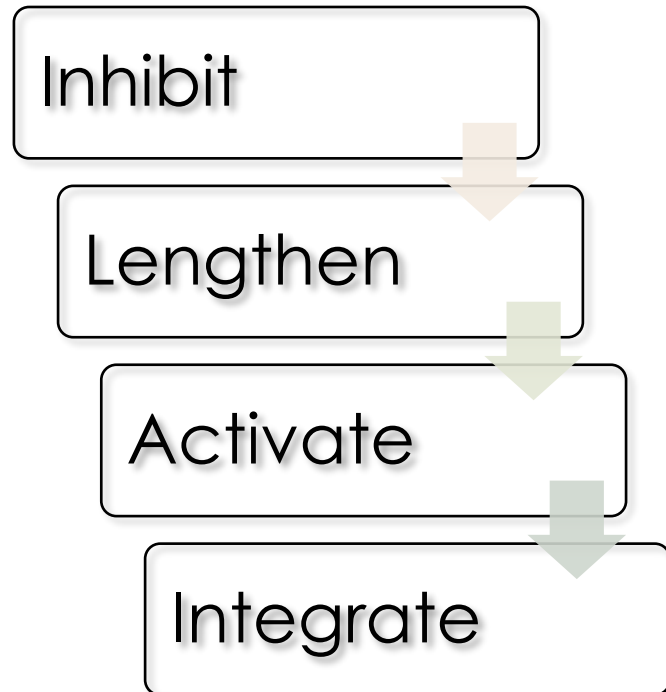
■ Perfect Week:

- Monday – Foundation work
- Tuesday – Tempo
- Wednesday – Circuit
- Thursday – Rest
- Friday – Neurological
- Saturday – Interval
- Sunday - Rest



Rxercise Bout

Corrective Continuum



Exercise Protocol



Training Protocols

Hypertrophy

6 – 12 rep
range to POF
(65 – 85-90 % 1RM)

Strength

1 – 5 rep
range to POF
(85 % + 1RM)

Power

1 – 6 rep range,
explosive
(70 – 95 % 1RM)

Programs

HIT

High Intensity
Training

HIIT

High Intensity
Interval Training

HVIT

High Volume
Intensity
Training

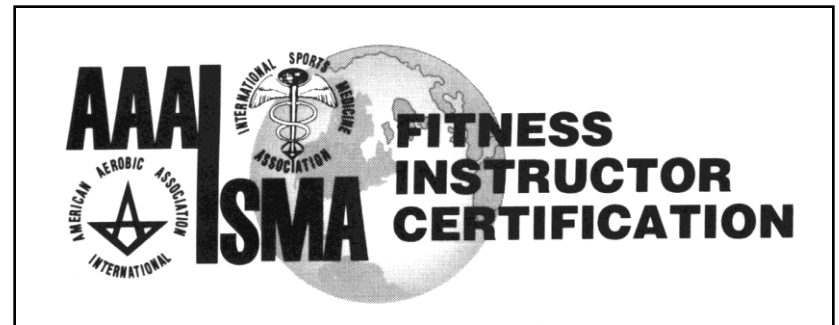
Circuit Training

POF = Point Of Failure



Advanced Nutrition Program Design

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Carbohydrates

- Energy
- Types
 - Simple
 - Monosaccharides ($C_6H_{12}O_6$) - Glucose Fructose Galactose
 - Disaccharides ($C_{12}H_{22}O_{11}$) - Maltose Sucrose Lactose
 - Complex
- Where Does Digestion Start?
- 4 Kcal / gram
- Insulin
- Sources:
 - Vegetables , Fruits, Grains, Legumes, etc.



Proteins

- Body Building Blocks
- Types
 - Non-essential
 - Essential (T.V. T.I.L.L. P.M. +H.)
- Where does digestion take place?
- 4 Kcal / gram
- Glucagon
- Sources:
 - Fish, Eggs, Poultry, Meat, Dairy, Tofu, Vegetarian Combinations, etc.



Fats

- Types
- Cholesterol, HDL, LDL
 - Triglycerides (Glycerol with 3 fatty acids)
 - Saturated
 - Monounsaturated (Omega-6)
 - Polyunsaturated (Omega-3)
- Functions
- Measurements
- Where is it Absorbed
- 9 Kcal / gram
- Leptin
- Sources?



Popular Performance Enhancing Drugs: Prescription

<i>Substance</i>	<i>Benefit</i>	<i>Users</i>	<i>Side Effects</i>
Stimulants	Increases motor activity	speed, power, endurance	Excessive energy expenditure
Steroids	Muscle growth	speed, power, hypertrophy	Masculinization of females Feminization of males
Testosterone	Muscle growth	speed, power, hypertrophy	Masculinization of females Feminization of males
HGH	Muscle growth	speed, power, hypertrophy	Giantism
EPO	Increases red blood ability to transport O ₂	endurance	Thickening of blood
DPO	Increases red blood ability to transport O ₂	endurance	Thickening of blood



Popular Performance Enhancing Drugs: Over the Counter

<i>Substance</i>	<i>Benefit</i>	<i>Users</i>	<i>Side Effects</i>
Creatine	Increase LBM?	speed, power, hypertrophy	Dehydration, cramping
Andro	Muscle growth	speed, power, endurance, hypertrophy	Masculinization of females Feminization of males, to start
HMB	Muscle growth	speed, power, hypertrophy, testosterone poisoned men	Masculinization of females Feminization of males, to start
DHEA	Muscle growth	speed, power, hypertrophy, testosterone poisoned men	Masculinization of females Feminization of males, to start
Thermogenic Agents	Weight Loss	Weight loss, energy	Increased HR, blood pressure, dehydration, insomnia, etc.
Ephedrine	Weight Loss	Virtually All walks of life	Shakes, increased Blood Pressure, Anxiety
Glucosamine	Joint Pain Reduction	People with Joint Pain	Diabetics
Caffeine	Increased Awareness	speed, power, hypertrophy, generally everybody	Shakes, increased Blood Pressure, Anxiety
Melatonin	Aids in Sleep	Insomnia	Addiction Depression



16 Step Diet Program (*Body Building*)

1. Drink a gallon of water
2. No whites
(except eggs, skim milk, potatoes, vegetables, fruits)
3. No visible fats, ½ cup high fiber cereals
(Mayo, salads dressings, meats fats)
4. No hydrogenated fats
5. No fried foods
6. No sugar drinks
7. No processed foods
8. No added salt. 1 cup high fiber cereal



16 Step Diet Program – con't

9. Cook foods by baking, grilling, poaching
10. No dairy
(except skim milk, egg whites)
11. No alcohol or fruit juices
12. No citrus fruits
13. No starches
(Potatoes, corn, peas, wheat, grains, rice)
14. No red meat
15. No fruit or dairy
16. 1 pint water



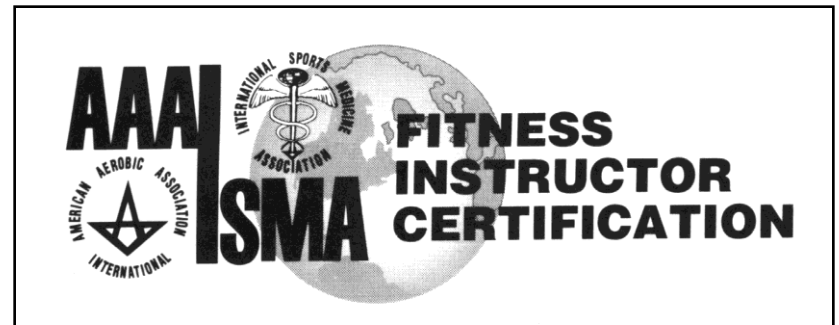
Energy Regulation

Goal	KCal Count	Workout	KCal Count	Workout Type	Cardio
Weight Loss <ul style="list-style-type: none"> • ↑ Wt / ↑ Protein (.8 -1.2) • ↑ CHO 	▲		▼	<ul style="list-style-type: none"> • ↓ Muscle Mass • Metabolic • Circuit • Lifestyle • ↑ NEAT 	↓↑D → ↑↓D
Maintenance <ul style="list-style-type: none"> • Balanced (Zone) 	=		=	<ul style="list-style-type: none"> • Variety • Circuit • Neurological • Hypertrophy • Strength 	↑↓D
Weight Gain <ul style="list-style-type: none"> • ↑ Protein to build • ↑ CHO for energy 	▲		▲	<ul style="list-style-type: none"> • Hypertrophy • Pyramids • Supersets • Strength 	↔I ↔D



What to do When Health Isn't Perfect

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Special Populations

- Diabetes
- Cardiovascular Disease
- Arthritis
 - Fibromyalgia
 - Chronic Fatigue
- Pregnancy
- Kids
- Seniors



Diabetic Concerns

- Ketosis
 - Lack of CHO
 - Lack of calories
- Exercise Concerns:
 - Glucose levels (300mg/dl)
 - Circulation (feet especially)
 - Energy Levels (Glucose stored as glycogen)
 - Vision
 - Others



Diabetes Mellitus

- Type I (IDDM)
 - ❑ Juvenile Onset
 - ❑ Absence of pancreatic β cells
- Treatment
 - ❑ Requires insulin
 - ❑ Diet & Exercise help
- Type II
 - ❑ Delayed Onset
- Treatment
 - ❑ Diet
 - ❑ Exercise
 - ❑ Insulin

**Hypoglycemic*

**Hyperglycemic*



Diabetes and Exercise

- Lowers, Raises, Maintains blood sugar levels
- High intensity lowers blood sugar
- Weight management
- Stress management



Hypertension

- Systolic / Diastolic
 - ❑ Contraction / Relaxation
- Normal
 - ❑ 120 / 80 mmHg
- Borderline
- Hypertensive
 - ❑ 140 / 90 mmHg

- Exercise
 - ❑ Watch for ↑diastolic
 - ❑ ↑systolic OK
- Practice
 - Circuit
 - ❑ Moderate
- Avoid
 - Val salva (static)
 - ❑ Holding breath
 - ❑ Tight gripping



Cardiovascular Heart Disease

- Angina
- Angioplasty
- Bypass
- Heart Replacement



CHD - When to Begin Exercise

- 6 week since incident
- 2 weeks since angioplasty
- Greater than 5 MET's at peak exertion
- Not compromised by other conditions
 - Phase I – In hospital with monitor
 - Phase II – Small Group monitored
 - Phase III – On their own...monitored encouraged



CHD Exercise Guidelines

- Large muscles first
- Increase loads slowly
- Full range of movements slow
- Correct breathing
- Avoid sustained gripping
- Minimize rest when appropriate
- Not to failure
- Stop if symptoms reappear

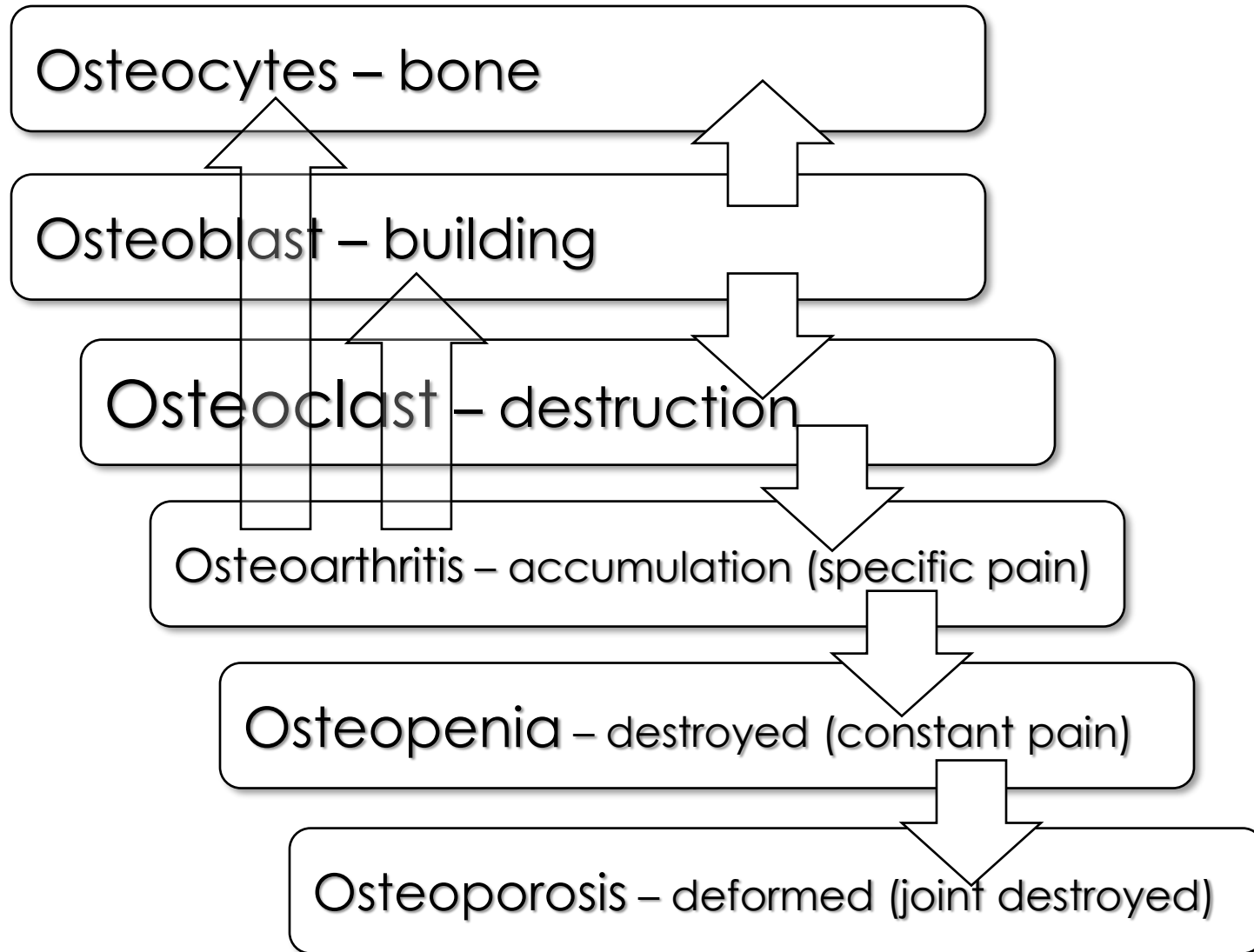


Arthritis

- Sarcopenia
 - ❑ Loss of muscle
- Osteoarthritis
 - ❑ Local
- Rheumatoid Arthritis
 - ❑ Systemic
- Exercise Benefits
 - ❑ Ease Pain
 - ❑ Decrease Joint Inflammation
 - ❑ Increase Function
 - ❑ Prevent or Lessen Joint Damage
 - ❑ Increase Awareness and Management of Pain



Pathway to Arthritis



Fibromyalgia

- Form of arthritis
- Feel pain all the time
- Mostly female
- De-conditioned
- Other issues
 - ❑ Sleep
 - ❑ Balance
 - ❑ Depression
- Exercise Goals
 - ❑ Feel better
 - ❑ Pain management
- ❖ Chronic Fatigue Syndrome



Pregnancy

Exercise Considerations

- Ischemia
- Caloric Intake
- Movement
- Bleeding
- Orthopedic
- Gestational Diabetes



Trimesters



Kids

➤ Emphasize:

- ❑ Strength
- ❑ Flexibility
- ❑ Muscular endurance
- ❑ Fun / play

➤ Gains from

- ❑ Neural pathways

➤ Considerations

- ❑ Joint damage
- ❑ Time constraints
- ❑ Motivation to exercise
- RM's 12-15
- Heat restrictions



Seniors

➤ Benefits

- ❑ Unlimited

■ Variability

■ Complicating Factors

- ❑ Health

- ❑ Money

- ❑ Transportation

➤ Considerations

- ❑ Balance

- ❑ Vision

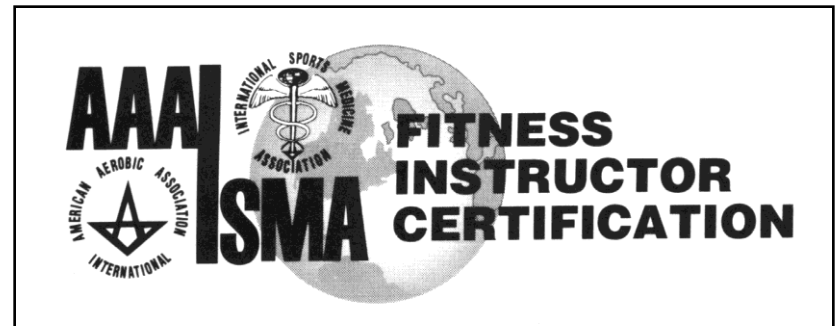
- ❑ Coordination

- ❑ Frailty



Putting It All Together

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Components

Workout

- Stability
- Flexibility
- Strength
- Power
- Agility

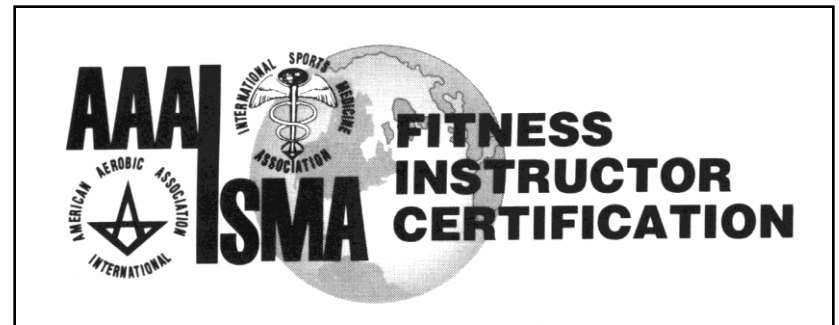
Complementary

- Nutrition
- Supplementation
- Recovery



The Business of Personal Training

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E



Motivating / Marketing Clients

- Contests
- Before and After Pictures
- Testimonials
- Gift Certificates
- Partnerships
 - Massage, Dinners, etc.
- Why Exercise
- Benefits
- 100 Reasons Why
- Referrals
- Gift Certificates

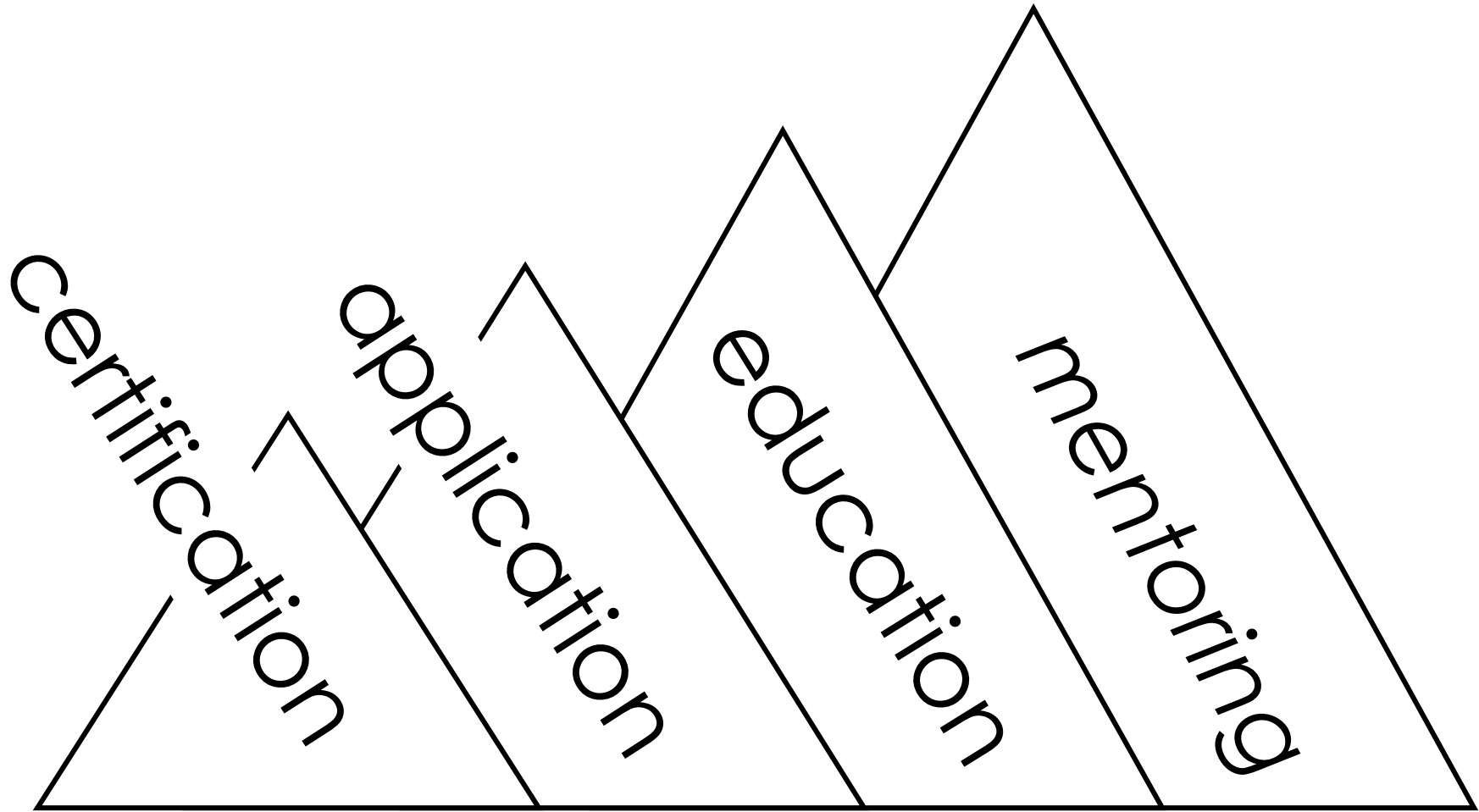


The Next Level of Training

- Client loads
- Small Group Training
- Professional Image
- Management



Your Career Progression



How to Contact Me:

Mike Rickett MS, CSCS*D, CSPS*D, RCPT*E

E-mail: mike@mikerickett.com

Web site: ApplicationInMotion.com

Instagram: [mrickett6069](https://www.instagram.com/mrickett6069)

1116 South Hillcrest Drive

Fort Collins, CO 80521

970-484-8847

